M.R.O. 1—77,006—8-6-37.

(1) Number of pages

(2) Date of repair

(3) Initials of the Referencer

MADRAS RECORD OFFICE.

Government of Madras.

Public works DEPARTMENT.

G.O. No. 298
612-614

Press
~~Mis.~~

Dated 31. 1. 1872.

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department, 31st January 1872.

Read the following papers:—

No. 612. From the Acting Superintending Engineer, 5th Division, to the Secretary to Government, Public Works Department, dated Salem, 8th January 1872, No. 213.

With reference to G. O., No. 3,140 of 13th December 1871, I have the honour to forward a copy of a letter from the Executive Engineer, Cuddalore, giving additional information regarding the Vellaur bridge recently destroyed.

2. The examination of the foundations should be made between 15th January and the end of February and not later than the latter date.

3. No pumps or other special appliances were used in the construction of the bridge, and Mr. Norfor is of opinion that the necessary examination of the foundations may be made with the aid of picottahs.

4. In the G. O. above quoted, reference is made to apparent omissions in the reports forwarded to them; it seems therefore only necessary to mention that when these reports were written the depth of water was far too great to admit of it being ascertained what portion of the piers had been carried away, nothing being visible but part of the abutments, while any examination of the foundations was, of course, out of the question.

5. There can be no reasonable doubt that the destruction of the bridge is due directly or indirectly to the unprecedentedly high flood; had the flood been of only an ordinary dimension, it is extremely probable that the bridge would have stood.

6. I think the hyphothesis put forward by Mr. Norfor is entitled to much consideration, and I would add that it suggests but another argument against a masonry bridge, unless indeed Portland cement be substituted for mortar.

From the Executive Engineer, No. 1 Range, to the Superintending Engineer, 5th Division, dated Cuddalore, 25th December 1871, No. 870.

I have the honour to inform you, in answer to your demi-official of the 16th instant, that the river Vellaur is likely to be dry enough to permit of the foundations of the bridge being examined after the 15th January, and until, not later than, the end of February; of course you know the river is tidal there, and it is never quite dry; there is at all times a width of about 200 out of the 500 feet between banks under water, averaging from 5 to 8 feet in depth. I think as soon after the 15th January as possible the examining Committee should be there.

2. I was at the bridge on the 15th to see if any sort of examination could be made; the water was not as low as I should have wished, but I saw much more than I did on the previous occasion.

3. As far as I can judge the foundations and flooring of the bridge are undisturbed, except in the centre of the river where the flooring seems to have been torn up between two large masses of fallen masonry; this has been done *since* the fall of the bridge by the action of the current consequent upon the obstruction caused by the massive blocks of masonry.

4. I am perfectly convinced that the failure of the bridge is not due to any undermining of the foundations, or defect in either materials or workmanship.

5. If you remember it was reported that the second arch from the south abutment was the first to fall in, and I am now satisfied that this assertion is substantially correct. On inspection I found that the second pier, from about 4 feet above floor level, has been moved bodily forward about a yard and a half down stream and then turned over on its north face; the whole mass is now lying in one large block very little injured, and the lower bit of it (pier) was clearly visible though under water, also in an uninjured condition, except that it had sunk a little on the side the pier reclined in turning over.

6. In fact, there is every appearance of a heavy floating body having struck against the pier and thus displaced it. I do not think the action of the current alone could have done this, and it is said * that large trees were washed down the river from Bowangherry; in fact, when I was there the second day after the bridge came down, I saw whole *topes* of plantain trees coming down.

* Proofs now exist.

7. It may be asked why the pier should have given way, or rather separated from the lower portion as it has done, and not all knocked to bits by the shock. I think I can see cause for this, and I must candidly give you my opinion. I have come to the conclusion, after mature consideration, that the old and more recent work in this second pier (from south) could not have set or bound together; it must be remembered that this pier had all its foundations laid, and we finished off the season of September 1869-70, leaving it 4½ feet above floor level, and in this year (1871) we commenced to build over the old work and to raise the pier.

8. That the old and new work is good and both properly set in themselves there can be no question, as the solid compact blocks of masonry lying there will bear evidence.

9. The only conclusion I can arrive at is that probably from the fact that the old work was exposed to the action of salt water for nearly two years (daily submerged) the new mortar did not adhere to the old work, though in every case of new work over old the practice was to remove the top course of bricks off the old masonry before building a fresh one upon it; this has always been my plan of action in such cases, and I have always considered and found it the safest and most sure means of securing adhesion between old and new work. I admit that my experience does not embrace work executed in salt water, but I had no reason to anticipate other than the usual satisfactory result in this case.

10. I am thoroughly persuaded that this, and this alone, is the cause of the failure of the bridge; the excellence of the brick and mortar and workmanship is apparent to all; the large masses of well-constructed masonry lying in the bed of the river speak for themselves; all the work, with the exception of the two last arches, turned in the end of August, which bear the appearance of not having set, is undoubtedly good, and these two arches, it must be remembered only so recently finished, were exposed to the fury of the cyclone, the intrados subjected to the action of waves raised by the furious wind when the mortar joints were probably cleaned out to a very considerable extent.

11. It may be said that the arches should not have been proceeded with at so late a period of the season, and to this I have to say that the late Colonel Boileau and myself consulted together on the advisability of stopping with the fifth arch for the season, and we came to the conclusion that, in the absence of abutment piers, any temporary arrangement to act as a counterpoise to the last arch finished would be extremely hazardous in a river such as the Vellaur; the idea was, therefore, abandoned, and every exertion made to finish the whole eleven arches in the season, which I did.

12. I acted for the best, and I even now think it is the best that could have been done under the circumstances; we anticipated neither the cyclone nor such an exceptionally high flood, and but for this and the pier being displaced these two last arches would unquestionably have been standing now.

13. To give you an idea of the volume of water which came down the river on the occasion of this high flood, I will begin by explaining that the bridge over the anicut at Shateatope across the same river, twelve miles up, has a clear waterway of 589 feet, *i. e*., nineteen arches of 31 feet, with piers 8 feet high, and rise of arch $7\frac{3}{4}$ feet, the flood registered $13\frac{1}{2}$ feet over crest of anicut (2 feet higher than any flood registered yet), or $2\frac{1}{2}$ feet below crown of arch; the breaches in the Trunk Road on the north approach to the bridge measure 1,300 feet in length, running at an average depth of 8·08 feet, clearly showing that but for these breaches this bridge would have been swept away too.

14. The whole of this water and other drainages below the anicut, as well as surplus from Veeranum tank, had to pass through eleven arches of 45 feet span, giving width of waterway 495 feet against 589 in the other bridge, with $13\frac{1}{2}$ feet height of pier and $11\frac{1}{2}$ feet rise of arch; then again the sea rose very considerably, stranding a large brig within about a mile of the bridge; this, in conjunction with the volume of water from above the anicut, cannot but have been as severe a trial as could well be brought to bear on a new work.

15. To bring it down to figures the result are as follow:—

The Shateatope anicut bridge has a clear waterway of 7,809 square feet; add to this the breaches 1,300 by 8=10,400 square feet, giving in all 18,200 square feet as the area of waterway occupied by the flood of the 7th. Every drop of this water, together with the large Veeranum and other drainages, had, when it arrived at the Moottaloor bridge, an area of 11,011 square feet* of waterway only to admit it, and this is irrespective of the space occupied by the tidal water which at the time was very considerable; it is, therefore, more than probable that this bridge, under *any* circumstances, would not have stood the flood.

* Against 18,200 square feet at Shateatope.

16. In conclusion, I may add that I did all in *my* power to bring the work to a successful issue. I visited it while in progress as often as I could, and while on the work spot my time was always fully given to minute and close examination and inspection to ensure, as far as possible, the best workmanship. On all such occasions, I was seldom in-doors two hours between sunrise and sunset, and many a time have I gone into the wells bare-footed to see how the concrete had set. I have always discharged my duties conscientiously, and the failure of this bridge after all the labour bestowed upon it is very disheartening to say the least of it.

17. The work was inspected by Colonels Foord, Roberts, Boileau and yourself while in various stages of progress, and I have never heard at any time a fault found with it. On the contrary all considered it good.

18. The work was commenced in April 1869-70 with an allotment of Rupees 20,000 for that year; had 30,000 or 40,000 been given instead the bridge would have been completed five or six months earlier, but in that year considerable reductions were ordered by the Government of India under the head of "Communications," and I was told there was not any chance of more money being obtained for that year in the face of these reductions; the consequence was we had got through over 20,000 Rupees by September and the months of December, January, February, and March, *the best season* for working in that year we could do nothing; April 1870-71 too was lost as we were engaged getting ready materials; I dare not begin earlier even to make bricks, etc., as it was not certain that any grant for the prosecution of the bridge would be forthcoming for 1870-71.

Proceedings of the Madras Government, Public Works Department,
31st January 1872.

No. 613. From the Acting Superintending Engineer, 5th Division, to the Secretary to Government, Public Works Department, dated Cuddalore, 16th January 1872, No. 223.

REFERRING to G. O., No. 3,140, dated 13th December 1871, and the appointment of a Special Committee to examine the foundations and report on the cause of the failure of the Vellaur bridge, I have the honour to point out that the examination of the foundations will entail a large expenditure, as wells will have to be sunk to form the ring bund round each pier examined. The cost of this with bailing, etc., for each pier will probably be about 500 Rupees.

2. I would myself deprecate any attempt to make use of these foundations for a new bridge; if it is determined to use them, it is obvious that the foundation of *every* pier must be examined, as it would be most unsatisfactory, not to say unsafe, to conclude that because a certain number are sound the rest must be so also.

3. The examination of all the foundations will entail a very large outlay and occupy much time, and I would say that, even were the most careful examination made to prove satisfactory, it would still be unsafe; it would be false economy to make use of these foundations, as it is difficult to believe that at least some portion has not been affected by such a flood as that of November, and it is very intelligible that the addition of a heavy superstructure might be the means of revealing a flaw which might escape even the most careful examination.

4. Be this, however, as it may, I would beg to be informed of the intentions of Government, for, as before pointed out, some expenditure must be incurred, and the extent of this will depend on that of the examination.

5. In anticipation of sanction, for no time must be lost, I have directed the Executive Engineer to prepare bricks and material sufficient to admit of the examination of *three* piers, and I beg to request sanction for the payment of the material prepared for the same.

6. I would further beg to be informed *when* it is proposed to make the examination, as there is no need of the Committee proceeding to the spot till all is ready for them.

No. 614. ORDER THEREON, 31st January 1872, No. 298.

CIVIL WORKS, No. 27.

IN order to constitute as independent a Committee as possible to inquire into the causes of the failure of the Vellaur bridge, the Government resolve that the Agents of the Madras and Great Southern of India Railways be respectively requested through the Consulting Engineer to be good enough to make the services of an experienced Engineer of the Company available for the duty to be associated with Captain J. Pennycuick, R.E., who will hold himself in readiness for the purpose.

2. Looking to the heavy expense which the examination of the foundations of all the piers of the bridge would entail, the Committee will confine their examination in the first instance to the foundations of the pier that first fell, and the

Government will on the result being reported determine whether it is necessary to examine any more. The Acting Superintending Engineer will make all necessary arrangements for conducting and expediting the examination in anticipation of the assembling of the Committee, and he will intimate to Captain Pennycuick, who is at the Presidency, and to the Agent of each Railway Company, the date on which he expects the site will be ready for examination.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

To the Acting Superintending Engineer, 5th Division.
,, Acting Consulting Engineer for Railways.
To Captain J. Pennycuick, R.E.
To the Controller of Public Works Accounts.

Exd. E. C. Shunker.

54

No. 213.

Superintending Engineers Office, 5th Division,

Salem, 8th January 1872.

From,

The Actg Superintending Engineer,

5th Division.

To,

The Secretary to Government,

P. W. Department.

Sir,

Enclosure - 1
1. Copy of Letter from Mr Norfor.

With reference to G. O. No. 3140 of 13th December 1871, I have the honor to forward a copy of a Letter from the Executive Engineer, Cuddalore giving additional information regarding the Vellaur Bridge recently destroyed.

2. The examination of the Foundations should be made between 15th January and the end of February and not later than the latter date.

3. No pumps or other special appliances were used in the Construction of the Bridge, and Mr. Norfor is of opinion that the necessary examination of the foundations may be made with the aid of Picottahs.

4. In the G. O. above quoted, reference is made

to

to apparent omissions in the Reports forwarded to them; it seems therefore only necessary to mention that when these Reports were written the depth of water was far too great to admit of it being ascertained what portion of the Piers had been carried away, nothing being visible but part of the Abutments, while any examination of the Foundations was of course out of the question.

There can be no reasonable doubt, that the destruction of the Bridge is due directly or indirectly to the unprecedentedly high flood, had the flood been of only an ordinary dimension, it is extremely probable that the Bridge would have stood. 5.

I think the hypothesis put forward by Mr Norfor is entitled to much consideration, and I would add that it suggests but another argument against a Masonry Bridge, unless indeed Portland Cement be substituted for Mortar. 6.

I have the honor to be,

Sir,

Your most obedient Servant

[signature] Captain R.E.

Actg Superintg Engineer, 5th Division

E/2/48

P. W. 1872 Depart.
Pro. of 5th Jany.

No. 183.

From
The Acty Superint. Engineer
5th Division.

To
The Secretary to Governmt
P. W. D.

Dated 8th
Received 15 } January 1872

No. 213. Encl. one.

Bridge across the Vellaur.
Forwarding copy of a letter from the Exe. Engineer, No. 1 Range, S. Arcot, giving additional information regarding the destruction of the Vellaur Bridge, with an intimation that the foundations should be examined between the 15th January & end of February that pumps &c. are not required for the Examination.

No. 298 - 31 Jany/72

Pro - 13 Decr /71 No. 227 - 29

No. 612

R.C. 19 Jany 1872 R. 22nd
C 17 Jany/72 R. 19

No. 870 No. 1 Range Office, S. Arcot,
Cuddalore, 25th December 1871

From
The Executive Engineer,
No. 1 Range, South Arcot

To
The Superintending Engineer,
5th Division.

Sir

I have the honor to inform you, in answer to your Demi Official ~~letter~~ of the 16th Instant, that the River Vellaur is likely to be dry enough to permit of the foundations of the Bridge being examined after the 15th January and until, not later than the 2nd of February, of course you know the River is tidal there and it is never quite dry, there is at all times a width of about 200 out of the 500 feet between banks under water averaging from 5 to 8 feet in depth. I think as soon after the 15th January as possible the examining Committee should be there.

2 I was at the Bridge on the 15th to see if any sort of examination

could be made; the water was not as low as I should have wished, but I saw much more than I did on the previous occasion.

3 As far as I can judge the foundations and flooring of the Bridge are undisturbed, except in the centre of the River where the flooring seems to have been torn up between two large masses of fallen Masonry; this has been done since the fall of the Bridge by the action of the current consequent upon the obstruction caused by the massive blocks of Masonry.

4 I am perfectly convinced that the failure of the Bridge is not due to any undermining of the foundations or defect in either materials or workmanship.

5 If you remember it was reported that the 2nd. Arch from the South Abutment was the first to fall in - and I am now satisfied that this assertion is substantially correct: On inspection I found that the second Pier, from about 4 feet above floor level, has been moved bodily forward about a yard and a half down

stream and then turned over on its north face, the whole mass is now lying in one large block very little injured and the lower bit of it (Pier) was clearly visible, though under water, also in an uninjured condition, except that it had sunk a little on the side the Pier declined in turning over.

6. In fact there is every appearance of a heavy floating body having struck against the Pier, and thus displaced it. I do not think the action of the current alone could have done this, and it is said that[x] large trees were washed down the River from Bowringherry - in fact when I was there the second day after the Bridge came down I saw whole topes of Plantain trees coming down.

[x] proofs now exist

7. It may be asked why the Pier should have given way or rather separated from the lower portion as it has done, and not all knocked to bits by the Shock. I think I can see cause for this, and I must candidly give you my opinion. I have come to the conclusion after mature consideration

that the old and more recent work in this second Pier (from South) could not have set or bound together: it must be remembered that this Pier had all its foundations laid and we finished off the season of September 1869/70 leaving it 4½ feet above floor level, and in this year 1871 we commenced to build over the old work and to raise the Pier.

8 That the old and new work is good and both properly set in themselves, there can be no question, as the solid compact blocks of masonry lying there will bear evidence.

9 The only conclusion I can arrive at is that probably from the fact that the old work was exposed to the action of salt water for nearly two years (daily submerged) the new Mortar did not adhere to the old work, though in every case of new work over old the practice was to remove the top course of bricks off the old masonry before building afresh upon it; this has always been my plan of action in such cases, and I

have always considered and found it the safest and most sure means of securing adhesion between old and new work; I admit that my experience does not embrace work executed in salt water, but I had no reason to anticipate other than the usual satisfactory result in this case.

10 I am thoroughly persuaded that this, and this alone is the cause of the failure of the Bridge – the excellence of the Brick, and mortar, and workmanship is apparent to all; the large masses of well constructed masonry lying in the bed of the River speak for themselves, all the work with the exception of the two last Arches turned in the end of August which bear the appearance of not having set is undoubtedly good, and these two Arches, it must be remembered only so recently finished were exposed to the fury of the Cyclone, the intrados subjected to the action of waves raised by the furious wind, when the mortar joints were probably cleaned out to a very considerable extent.

11 It may be said that the Arches should not have been proceeded with at so

late period of the season: and to this I have to say that the late Colonel Boileau and myself, consulted together on the advisability of stopping ~~the arch~~ with the 5th Arch for the Season, and we came to the Conclusion that in the absence of Abutment Piers any temporary arrangement to act as a Counterpoise to the last arch finished would be extremely hazardous in a River such as the Vellaur, the idea was therefore abandoned and every exertion made to finish the whole 11 Arches in the Season, which I did.

12. I acted for the best, and I even now think it is the best that could have been done under the circumstances, we anticipated neither the Cyclone nor such an exceptionally high flood, and but for this and the Pier being displaced these two last Arches would unquestionably have been standing now

13 To give you an idea of the volume of water which came down the River on the occasion of this high flood, I will begin by explaining that the Bridge over the Anicut at Shatiatope across the same River, 12 Miles up, has a clear waterway of 589 feet i.e. 19 Arches of 31 feet, with Piers 8' high, and rise

of Arch 7¼, the flood registered 13½ feet over crest of Annicut (2 feet higher than any flood registered yet) or 2½ feet below crown of Arch: the breaches in the Trunk Road on the North approach to the Bridge measure 1300' in length running at an average depth of 8.08 feet, clearly showing that but for these breaches this Bridge would have been swept away too.

14 The whole of this water and other drainages below the Annicut, as well as Surplus from Veeranum Tank had to pass through 11 Arches of 45' span giving width of waterway 495 feet against 589 in the other Bridge with 13½ feet height of Pier and 11½ feet rise of Arch, then again the Sea rose very considerably stranding a large Brig within about a mile of the Bridge; this in conjunction with the volume of water from above the Annicut cannot but have been as severe a trial as could well be brought to bear on a new work.

15 To bring it down to figures the results are as follows.

The Shatealope Annicut Bridge has a clear waterway of 7809 Square feet,

add to this the breaches 1300 × 8 = 10400 square feet, giving in all 18,200 square feet as the area of water-way occupied by the flood of the 7th. Every drop of this water, together with the large Veeranum and other drainages had when it arrived at the Moottaloor Bridge an area of 11011* square feet of waterway only to admit it and this is irrespective of the space occupied by the tidal water which at the time was very considerable, it is therefore more than probable that this Bridge under any circumstances would not have stood the flood.

*against 18200 square feet at Shahcatope.

16 In conclusion, I may add that I did all in my power to bring the work to a successful issue. I visited it while in progress as often as I could and while on the work spot my time was always fully given to minute and close examination and inspection, to ensure as far as possible the best workmanship. On all such occasions I was seldom indoors two hours between sun rise and sun set, and many a time have I gone into the wells bare footed to see how the concrete had set. I have always discharged my duties conscientiously

and the failure of the Bridge after all the labor bestowed upon it is very disheartening to say the least of it.

17 The work was inspected by Colonels Foord, Roberts, Boileau and yourself while in various stages of progress, and I have never heard at any time a fault found with it - On the contrary all considered it good.

18 The work was commenced in April 1869/70 with an allotment of Rupees 20,000 for that year, had 30 or 40,000 been given instead the Bridge would have been completed 5 or 6 Months earlier, but in that year considerable reductions were ordered by the Government of India under the head of "Communications" and I was told there was not any chance of more money being obtained for that year in the face of these reductions, the consequence was we had got through over 20,000

Rupees by September and the months of December, January, February and March, the best season for working in that year we could do nothing: April 1870/71 too was lost as we were engaged getting ready materials. I dare not begin earlier even to make Bricks &c., as it was not certain that any grant for the prosecution of the Bridge would be forthcoming for 1870/71.

I have the honor to be &c.

(Signed) R. E. Norfor

Executive Engineer

No. 1 Range South Arcot

(True Copy)

James Oertel Captn. R.E.

Acting Supdg. Engr. 5th Dn.

4/-

Enclosure No: 1 in letter
No: 213 dated 8th Jany/72
from the Offg: Supg: Engr:
5th Dn to the Secy: to Govt:
D. P. W.

P. W. 183/72.

Pros - 31st Jany /72 Sn L. 612. -

No. 223.

11 No. 9

No

Suptg Engr's Office 5th Dn.,
Cuddalore 16th January 1872.

From

Captain J. Vertue R. E.,
Acting Suptg. Engineer,
5th Division.

To

Colonel J. Carpendale R. E.,
Secretary to Government,
P. W. D.

Sir,

Referring to G. O. No. 3140, dated 13th December 1871, and the appointment of a Special Committee to examine the Foundations and report on the cause of the failure of the Vellaur Bridge, I have the honor to point out that the examination of the Foundations will entail a large expenditure, as Wells will have to be sunk to form the Ring Bund round each Pier examined. The cost of this with

Bailing &c.ᵃ for each Pier will probably be about 500 Rupees.

2 I would myself deprecate any attempt to make use of these Foundations for a new Bridge; if it is determined to use them, it is obvious that the Foundation of <u>every</u> Pier must be examined, as it would be most unsatisfactory, not to say unsafe, to conclude that, because a certain number are sound, the rest must be so also.

3 The examination of all the Foundations will entail a very large outlay and occupy much time, and I would say that, even were the most careful examination to prove satisfactory, it would still be unsafe, it would be false economy, to make use of these Foundations, as it is difficult to believe that at least some portion has not been affected by such a flood as that of November, and it is

very intelligible that the addition of a heavy Superstructure might be the means of revealing a flaw which might escape even the most careful examination.

4 Be this, however, as it may, I would beg to be informed of the intentions of Government, for, as before pointed out, some expenditure must be incurred, and the extent of this will depend on that of the examination.

5 In anticipation of Sanction for no time must be lost - I have directed the Executive Engineer to prepare Bricks and material sufficient to admit of the examination of 3 Piers, and I beg to request sanction for the payment of the material prepared for the same.

6 I would further beg to be informed when it is proposed to make the examination, as there is no need

of the Committee proceeding to the spot till all is ready for them.

I have the honor to be

Sir,

Your Most Obdt. Servt.

Lance Vertue Captn. R.E.

Acting Supt. Engineer 5th Dn.

Pro 13 Decr/71 No 227 - 229

Public Works 1872 Department
Pro. of [illegible] for January
From No 256
The Acting Supdg. Engineer
5th Division
To
The Secretary to Govt.
P.W.D.

Dated 16th
Recd 18th January 1872

No. 223.

Stating that the examination of the foundations of the Vellaur bridge will entail a large expenditure; and requesting sanction for the payment of Bricks &ca ordered to be prepared to admit of the examination of certain Piers &ca

No 298 - 31st Jany/72

No 613
2 . 19 Jany 1872

No. 298.

183
258

In order to constitute as independent a Committee as possible to enquire into the causes of the failure of the Vellaur Bridge, the Govt. resolve that the Agents of the Madras and Great Southern of India Railways be respectively requested through the Consg. Engineer to be good enough to make the services of an experienced Engineer of the Company available

for the duty to be associated
with Capt: J. Pennycuick
R. E. who will hold
himself in readiness
for the purpose.

Looking to the heavy
expense which the exa-
-mination of the founda-
-tions of all the piers of
the bridge would entail,
the Committee will
confine their examination
in the first instance
to the foundations of the
pier that first fell,
and the Govt. will on
the result being reported
determine whether it is
necessary to examine
any more - The Acting
Supg Engineer will make
all necessary arrangements
for

for conducting and expe-
-diting the examination
in anticipation of the
assembling of the Committee,
and he will intimate to
Capt: Pennycuick who is
at the Presidency and
to the Agent of each Rail-
-way Co. the date on which
he expects the site will
be ready for examination.

J.

50/6

6 Supg Engr. 5th Divn.
12 Cons Engr. for Railways.
3 Capt: J. Pennycuick R.E.
Controller.

Despd. 1/2/72

Very Urgent

Cir all

Letters from Superintending Engineer 5th Division dated 8th January 1872, No 213. and 16th Janry 1872 No 223

The foregoing letter is circulated for orders with reference to G. O. No 3140 dated 13th December 1871 in which the Government determined on appointing a Special Committee to enquire into the causes of the failure of the Vellaur Bridge, and called upon the Supg Engineer to report when the water may

I would rather say the Mr Railway Engineers and Capt. Hangcuick.

N.

AV

JDL

SB

may be expected to sub-
-side sufficiently to admit
of an examination of
the foundation of the
bridge.

I beg ~~to suggest~~ for
the consideration of Govern-
-ment that in order to
constitute as independent
a Committee as possible
it might be desirable to
ask the Agent of the
Madras Railway, and
the Agent of the Great
Southern of India Rail-
-way each to place an
experienced Engineer
at the disposal of
Government for the
purpose

16

purpose to be associated with Mr. Fraser C.E of the Dept Public Works Executive Engineer Bellary, the Committee to meet at the site of the Bridge on the 1st of February or as soon after as possible.

H. Feb 16th

[illegible]

(2)

6 Nov 1838

R.C.: 17 Jany/72 A. 22nd
6/17 Jany/72 a.

Nos 183 & 256

Govt. of {1872} Madras.

PUBLIC WORKS.

To The Ag Superintending Engr.
5th Division

Very urgent

Dated

Recd. Encl. 1

G. O. 31st Jany 1872, No. 298.

Nos. 612 @ 614

Vellaur Bridge. Passing orders on letter from the Supdg: Engr. of the 5th relating to the failure of the Vellaur Bridge -